AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 10/608,519

Filing Date: June 24, 2003

Title: THERMAL INTERFACE APPARATUS, SYSTEMS, AND FABRICATION METHODS

Assignee: Intel Corporation

IN THE CLAIMS

Page 3

Dkt: 884.847US1 (INTEL)

Please amend the claims as follows:

- 1. (Currently Amended) An apparatus, comprising:
 a unitary, substantially uniformly distributed transfer material forming a mesh; and
 a carrier material coupled to the unitary, substantially uniformly distributed transfer
 material, wherein a plurality of elements included in the unitary, substantially uniformly
 distributed transfer material are distributed in a substantially repeating pattern.
- 2. (Original) The apparatus of claim 1, wherein the unitary, substantially uniformly distributed transfer material further comprises at least one of a component transfer material including bismuth, copper, gold, indium, zinc, antimony, magnesium, lead, silver, tin, and alloys thereof.
- 3. (Original) The apparatus of claim 1, wherein the carrier material further comprises at least one of a component carrier material including a polymer, an elastomer, a hardener, a catalyst, a reactive diluent, an adhesion promoter, a surfactant, a deforming agent, a fluxing agent, a toughening agent, a coupling agent, an epoxy, an ester, a siloxane, a polyamide, a silicone, a rubber, and a wetting agent.
- 4. (Currently Amended) An apparatus, comprising:

 a unitary, substantially uniformly distributed transfer material forming a mesh; and
 a carrier material coupled to the unitary, substantially uniformly distributed transfer

 material, The apparatus of claim 1, wherein the [[a]] plurality of elements included in the unitary, substantially uniformly distributed transfer material are distributed on a grid pattern.
- 5. (Currently Amended) An apparatus, comprising:
 a unitary, substantially uniformly distributed transfer material forming a mesh; and

Page 4

Title: THERMAL INTERFACE APPARATUS, SYSTEMS, AND FABRICATION METHODS

Assignee: Intel Corporation

a carrier material coupled to the unitary, substantially uniformly distributed transfer material, The apparatus of claim 1, wherein the unitary, substantially uniformly distributed transfer material further comprises[[:]] a plurality of substantially similar geometric objects.

- (Original) The apparatus of claim 5, wherein the plurality of substantially similar 6. geometric objects are arranged in a substantially repeating pattern.
- 7. (Original) The apparatus of claim 5, wherein the plurality of substantially similar geometric objects includes a plurality of regular geometric objects.
- (Original) The apparatus of claim 5, wherein the plurality of substantially similar 8. geometric objects includes a plurality of irregular geometric objects.
- 9. (Original) The apparatus of claim 5, wherein at least one of a height, a shape, and a spacing of the plurality of substantially similar geometric objects is selected based on a desired volume of the unitary, substantially uniformly distributed transfer material.
- 10. (Original) The apparatus of claim 5, wherein the unitary, substantially uniformly distributed transfer material comprises a plurality of connecting elements to couple the plurality of substantially similar geometric objects to each other.
- (Original) The apparatus of claim 10, wherein the plurality of connecting elements are 11. arranged in a substantially repeating pattern.

Claims 12. – 17. (Canceled)

- (Currently Amended) A system, comprising: 18.
 - a wireless transceiver;
 - a die including a circuit coupled to the wireless transceiver; and

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a unitary, substantially uniformly distributed transfer material forming a mesh and adjacent the die and coupled to a carrier material The system of claim 17, wherein a plurality of elements included in the unitary, substantially uniformly distributed transfer material are distributed in a substantially repeating pattern.

- 19. (Original) The system of claim 18, further comprising:
- a plurality of connecting elements to couple the plurality of elements included in the unitary, substantially uniformly distributed transfer material to each other.
- 20. (Original) The system of claim 18, wherein the substantially repeating pattern comprises a parallel pattern.
- 21. (Original) The system of claim 18, wherein the substantially repeating pattern comprises a grid pattern.
- 22. (Currently Amended) A system, comprising:
 - a wireless transceiver;
 - a die including a circuit coupled to the wireless transceiver; and
- a unitary, substantially uniformly distributed transfer material forming a mesh and adjacent the die and coupled to a carrier material. The system of claim-17, wherein the unitary, substantially uniformly distributed transfer material further comprises [[:]] a plurality of substantially similar geometric objects distributed in a grid pattern.
- 23. (Original) The system of claim 22, wherein at least one of a height, a shape, and a spacing of a plurality of substantially similar geometric objects is selected based on a package stress associated with the die.
- 24. (Currently Amended) The system of claim 18[[17]], further comprising:
 a heat dissipating element coupled to the unitary, substantially uniformly distributed transfer material.

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Claims 25. - 35. (Canceled)

36. (Previously Presented) The apparatus of claim 1, further comprising:
a heat dissipating element coupled to the unitary, substantially uniformly distributed transfer material.

Page 6

Dkt: 884.847US1 (INTEL)

- 37. (Currently Amended) An apparatus, comprising:

 a unitary, substantially uniformly distributed transfer material forming a mesh; and
 a carrier material coupled to the unitary, substantially uniformly distributed transfer

 material, The apparatus of claim 1, wherein the unitary, substantially uniformly distributed
 transfer material includes[[:]] an array of solderable elements coupled to each other by a plurality
 of solderable connecting elements.
- 38. (Previously Presented) The apparatus of claim 37, wherein the array of solderable elements is at least partially embedded in the carrier material.
- 39. (Previously Presented) The apparatus of claim 37, wherein an average volume of each one of the plurality of solderable connecting elements is less than about one-half of a volume of an average size of each one of the array of solderable elements.
- 40. (Previously Presented) The apparatus of claim 6, wherein the substantially repeating pattern comprises a parallel pattern.